

## RAW SEQUENCE LISTING

#  
5

The Biotechnology Systems Branch of the Scientific and Technical  
Information Center (STIC) no errors detected.

Application Serial Number: 10/579,390  
Source: PCT  
Date Processed by STIC: 08/26/2005

# ***ENTERED***



PCT

## RAW SEQUENCE LISTING

DATE: 08/26/2005

PATENT APPLICATION: US/10/519,390

TIME: 14:41:21

Input Set : A:\sequence listing (pct\_kr04\_01246).txt

Output Set: N:\CRF4\08262005\J519390.raw

```

1 <110> APPLICANT: MEDEXGEN Inc.
2     CHUNG, Yong-Hoon
3     LEE, Hak-sup
4     YI, Ki-Wan
5     KIM, Jae-Youn
6     HEO, Youn-Hwa
8 <120> TITLE OF INVENTION: A method of improving efficacy of biological response-
modifying
9     proteins and the example muteins
C--> 11 <140> CURRENT APPLICATION NUMBER: US/10/519,390
C--> 11 <141> CURRENT FILING DATE: 2004-12-23
W--> 0 <130> FILE REFERENCE:
11 <150> PRIOR APPLICATION NUMBER: KR10-2003-0051846
12 <151> PRIOR FILING DATE: 2003-07-26
14 <160> NUMBER OF SEQ ID NOS: 65
16 <170> SOFTWARE: KopatentIn 1.71
18 <210> SEQ ID NO: 1
19 <211> LENGTH: 200
20 <212> TYPE: PRT
21 <213> ORGANISM: Artificial Sequence
23 <220> FEATURE:
24 <223> OTHER INFORMATION: CNTF: 3rd, 83rd, 98th, 105th, 119th, 152nd or 178th Phe is
25     replaced by Val.
28 <400> SEQUENCE: 1
29 Met Ala Phe Thr Glu His Ser Pro Leu Thr Pro His Arg Arg Asp Leu
30   1           5           10           15
32 Cys Ser Arg Ser Ile Trp Leu Ala Arg Lys Ile Arg Ser Asp Leu Thr
33           20           25           30
35 Ala Leu Thr Glu Ser Tyr Val Lys His Gln Gly Leu Asn Lys Asn Ile
36   35           40           45
38 Asn Leu Asp Ser Ala Asp Gly Met Pro Val Ala Ser Thr Asp Gln Trp
39   50           55           60
41 Ser Glu Leu Thr Glu Ala Glu Arg Leu Gln Glu Asn Leu Gln Ala Tyr
42  65           70           75           80
44 Arg Thr Phe His Val Leu Leu Ala Arg Leu Leu Glu Asp Gln Gln Val
45           85           90           95
47 His Phe Thr Pro Thr Glu Gly Asp Phe His Gln Ala Ile His Thr Leu
48           100          105          110
50 Leu Leu Gln Val Ala Ala Phe Ala Tyr Gln Ile Glu Glu Leu Met Ile
51           115          120          125
53 Leu Leu Glu Tyr Lys Ile Pro Arg Asn Glu Ala Asp Gly Met Pro Ile
54           130          135          140
56 Asn Val Gly Asp Gly Gly Leu Phe Glu Lys Lys Leu Trp Gly Leu Lys
57 145          150          155          160

```

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```

59 Val Leu Gln Glu Leu Ser Gln Trp Thr Val Arg Ser Ile His Asp Leu
60           165           170           175
62 Arg Phe Ile Ser Ser His Gln Thr Gly Ile Pro Ala Arg Gly Ser His
63           180           185           190
65 Tyr Ile Ala Asn Asn Lys Lys Met
66           195           200
69 <210> SEQ ID NO: 2
70 <211> LENGTH: 166
71 <212> TYPE: PRT
72 <213> ORGANISM: Artificial Sequence
74 <220> FEATURE:
75 <223> OTHER INFORMATION: EPO: 48th, 138th, 142nd or 148th Phe is replcaced by Val.
78 <400> SEQUENCE: 2
79 Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu
80   1           5           10           15
82 Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His
83           20           25           30
85 Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe
86           35           40           45
88 Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp
89           50           55           60
91 Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu
92   65           70           75           80
94 Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp
95           85           90           95
97 Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu
98           100          105          110
100 Arg Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala
101           115          120          125
103 Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val
104           130          135          140
106 Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala
107 145           150          155          160
109 Cys Arg Thr Gly Asp Arg
110           165
113 <210> SEQ ID NO: 3
114 <211> LENGTH: 209
115 <212> TYPE: PRT
116 <213> ORGANISM: Artificial Sequence
118 <220> FEATURE:
119 <223> OTHER INFORMATION: Flt3L: 6th, 15th, 81st, 87th, 96th or 124th Phe is replaced
by
120           Val.
123 <400> SEQUENCE: 3
124 Thr Gln Asp Cys Ser Phe Gln His Ser Pro Ile Ser Ser Asp Phe Ala
125   1           5           10           15
127 Val Lys Ile Arg Glu Leu Ser Asp Tyr Leu Leu Gln Asp Tyr Pro Val
128           20           25           30
130 Thr Val Ala Ser Asn Leu Gln Asp Glu Glu Leu Cys Gly Gly Leu Trp
131           35           40           45

```

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```

133 Arg Leu Val Leu Ala Gln Arg Trp Met Glu Arg Leu Lys Thr Val Ala
134      50      55      60
136 Gly Ser Lys Met Gln Gly Leu Leu Glu Arg Val Asn Thr Glu Ile His
137 65      70      75      80
139 Phe Val Thr Lys Cys Ala Phe Gln Pro Pro Pro Ser Cys Leu Arg Phe
140      85      90      95
142 Val Gln Thr Asn Ile Ser Arg Leu Leu Gln Glu Thr Ser Glu Gln Leu
143      100      105      110
145 Val Ala Leu Lys Pro Trp Ile Thr Arg Gln Asn Phe Ser Arg Cys Leu
146      115      120      125
148 Glu Leu Gln Cys Gln Pro Asp Ser Ser Thr Leu Pro Pro Pro Trp Ser
149      130      135      140
151 Pro Arg Pro Leu Glu Ala Thr Ala Pro Thr Ala Pro Gln Pro Pro Leu
152 145      150      155      160
154 Leu Leu Leu Leu Leu Leu Pro Val Gly Leu Leu Leu Leu Ala Ala Ala
155      165      170      175
157 Trp Cys Leu His Trp Gln Arg Thr Arg Arg Arg Thr Pro Arg Pro Gly
158      180      185      190
160 Glu Gln Val Pro Pro Val Pro Ser Pro Gln Asp Leu Leu Leu Val Glu
161      195      200      205
163 His

```

167 &lt;210&gt; SEQ ID NO: 4

168 &lt;211&gt; LENGTH: 174

169 &lt;212&gt; TYPE: PRT

170 &lt;213&gt; ORGANISM: Artificial Sequence

172 &lt;220&gt; FEATURE:

173 <223> OTHER INFORMATION: G-CSF: 13rd, 83rd, 113rd, 140th, 144th or 160th Phe is  
replaced

174 by Val.

177 &lt;400&gt; SEQUENCE: 4

```

178 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
179 1      5      10      15
181 Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
182      20      25      30
184 Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val
185      35      40      45
187 Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys
188      50      55      60
190 Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
191 65      70      75      80
193 Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser
194      85      90      95
196 Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp
197      100      105      110
199 Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro
200      115      120      125
202 Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe
203      130      135      140
205 Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
206 145      150      155      160

```

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Input Set : A:\sequence listing (pct\_kr04\_01246).txt

Output Set: N:\CRF4\08262005\J519390.raw

208 Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro  
 209 165 170  
 212 <210> SEQ ID NO: 5  
 213 <211> LENGTH: 127  
 214 <212> TYPE: PRT  
 215 <213> ORGANISM: Artificial Sequence  
 217 <220> FEATURE:  
 218 <223> OTHER INFORMATION: GM-CSF: 47th, 103rd, 106th, 113rd or 119th Phe is replaced  
 by  
 219 Val.  
 222 <400> SEQUENCE: 5  
 223 Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His Val  
 224 1 5 10 15  
 226 Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp Thr  
 227 20 25 30  
 229 Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe Asp  
 230 35 40 45  
 232 Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys Gln  
 233 50 55 60  
 235 Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met Met  
 236 65 70 75 80  
 238 Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser Cys  
 239 85 90 95  
 241 Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys Asp  
 242 100 105 110  
 244 Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu  
 245 115 120 125  
 250 <210> SEQ ID NO: 6  
 251 <211> LENGTH: 191  
 252 <212> TYPE: PRT  
 253 <213> ORGANISM: Artificial Sequence  
 255 <220> FEATURE:  
 256 <223> OTHER INFORMATION: GH: 1st, 10th, 25th, 31st, 44th, 54th, 92th, 97th, 139th,  
 146th,  
 257 166th, 176th or 191st Phe is replaced by Val.  
 260 <400> SEQUENCE: 6  
 261 Phe Pro Thr Ile Pro Leu Ser Arg Leu Phe Asp Asn Ala Met Leu Arg  
 262 1 5 10 15  
 264 Ala His Arg Leu His Gln Leu Ala Phe Asp Thr Tyr Gln Glu Phe Glu  
 265 20 25 30  
 267 Glu Ala Tyr Ile Pro Lys Glu Gln Lys Tyr Ser Phe Leu Gln Asn Pro  
 268 35 40 45  
 270 Gln Thr Ser Leu Cys Phe Ser Glu Ser Ile Pro Thr Pro Ser Asn Arg  
 271 50 55 60  
 273 Glu Glu Thr Gln Gln Lys Ser Asn Leu Glu Leu Leu Arg Ile Ser Leu  
 274 65 70 75 80  
 276 Leu Leu Ile Gln Ser Trp Leu Glu Pro Val Gln Phe Leu Arg Ser Val  
 277 85 90 95  
 279 Phe Ala Asn Ser Leu Val Tyr Gly Ala Ser Asp Ser Asn Val Tyr Asp  
 280 100 105 110  
 282 Leu Leu Lys Asp Leu Glu Glu Gly Ile Gln Thr Leu Met Gly Arg Leu

## RAW SEQUENCE LISTING

DATE: 08/26/2005

PATENT APPLICATION: US/10/519,390

TIME: 14:41:22

Input Set : A:\sequence listing (pct\_kr04\_01246).txt

Output Set: N:\CRF4\08262005\J519390.raw

```

283          115          120          125
285 Glu Asp Gly Ser Pro Arg Thr Gly Gln Ile Phe Lys Gln Thr Tyr Ser
286          130          135          140
288 Lys Phe Asp Thr Asn Ser His Asn Asp Asp Ala Leu Leu Lys Asn Tyr
289 145          150          155          160
291 Gly Leu Leu Tyr Cys Phe Arg Lys Asp Met Asp Lys Val Glu Thr Phe
292          165          170          175
294 Leu Arg Ile Val Gln Cys Arg Ser Val Glu Gly Ser Cys Gly Phe
295          180          185          190
300 <210> SEQ ID NO: 7
301 <211> LENGTH: 165
302 <212> TYPE: PRT
303 <213> ORGANISM: Artificial Sequence
305 <220> FEATURE:
306 <223> OTHER INFORMATION: IFN-alpha 2A: 27th, 36th, 38th, 43rd, 47th, 64th, 67th,
84th,
307          123rd or 151st Phe is replaced by Val.
310 <400> SEQUENCE: 7
311 Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
312 1          5          10          15
314 Leu Leu Ala Gln Met Arg Lys Ile Ser Leu Phe Ser Cys Leu Lys Asp
315          20          25          30
317 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
318          35          40          45
320 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
321          50          55          60
323 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
324 65          70          75          80
326 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
327          85          90          95
329 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
330          100          105          110
332 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
333          115          120          125
335 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
336          130          135          140
338 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
339 145          150          155          160
341 Leu Arg Ser Lys Glu
342          165
345 <210> SEQ ID NO: 8
346 <211> LENGTH: 165
347 <212> TYPE: PRT
348 <213> ORGANISM: Artificial Sequence
350 <220> FEATURE:
351 <223> OTHER INFORMATION: IFN-alpha 2B: 27th, 36th, 38th, 43rd, 47th, 64th, 67th,
84th,
352          123rd or 151st Phe is replaced by Val.
355 <400> SEQUENCE: 8
356 Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
357 1          5          10          15

```

## VERIFICATION SUMMARY

DATE: 08/26/2005

PATENT APPLICATION: US/10/519,390

TIME: 14:41:23

Input Set : A:\sequence listing (pct\_kr04\_01246).txt

Output Set: N:\CRF4\08262005\J519390.raw

L:11 M:270 C: Current Application Number differs, Replaced Current Application No

L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:0 M:201 W: Mandatory field data missing, &lt;130&gt; FILE REFERENCE